

PTO/SB/17 (10-08)

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Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).

FEE TRANSMITTAL

For FY 2009

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$) 540.00

Complete if Known

Application Number	10/527,125
Filing Date	March 8, 2005
First Named Inventor	Jill MacDonald Boyce
Examiner Name	J. V. Lewis
Art Unit	2425
Attorney Docket No.	PU020419 Customer No. 24498

METHOD OF PAYMENT (check all that apply)☐ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____☒ Deposit Account Deposit Account Number: 07-0832 Deposit Account Name: THOMSON LICENSING LLC

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FEE CALCULATION**1. BASIC FILING, SEARCH, AND EXAMINATION FEES**

Application Type	FILING FEES		SEARCH FEES		EXAMINATION FEES		Fees Paid (\$)
	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	Fee (\$)	Small Entity Fee (\$)	
Utility	330	165	540	270	220	110	
Design	220	110	100	50	140	70	
Plant	220	110	330	165	170	85	
Reissue	330	165	540	270	650	325	
Provisional	220	110	0	0	0	0	

2. EXCESS CLAIM FEES**Fee Description**

Each claim over 20 (including Reissues)

Each independent claim over 3 (including Reissues)

Multiple dependent claims

Fee (\$)	Small Entity Fee (\$)
52	26
220	110
390	195
Multiple Dependent Claims	
Fee (\$)	Fee Paid (\$)

Total Claims	Extra Claims	Fee (\$)	Fee Paid (\$)
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- 20 or HP = _____ x _____ = _____

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims	Extra Claims	Fee (\$)	Fee Paid (\$)
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- 3 or HP = _____ x _____ = _____

HP = highest number of independent claims paid for, if greater than 3.

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is \$270 (\$135 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee (\$)	Fee Paid (\$)
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- 100 = _____ / 50 = _____ (round up to a whole number) x _____ = _____

4. OTHER FEE(S)

Non-English Specification, \$130 fee (no small entity discount)

Other (e.g., late filing surcharge): FEE FOR FILING APPEAL BRIEF

Fees Paid (\$)

\$540.00

SUBMITTED BY

Signature		Registration No. 28,234 (Attorney/Agent)	Telephone (609) 734-6820
Name (Print/Type)	ROBERT B. LEVY		Date January 5, 2009

This collection of information is required by 37 CFR 1.136. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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Art Unit	2425
Attorney Docket No.	PU020419 Customer No. 24498

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Multiple Dependent Claims	
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Fees Paid (\$)

\$540.00

SUBMITTED BY

Signature		Registration No. (Attorney/Agent) 28,234	Telephone (609) 734-6820
Name (Print/Type)	ROBERT B. LEVY		Date January 5, 2009

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CUSTOMER NO.: 24498

Serial No.: 10/527,125

PATENT
PU020419

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Applicants: Jill MacDonald Boyce et al. : Examiner: J. V. Lewis

Serial No: 10/527,125 : Art Unit: 2425

Filed: March 8, 2005 :

For: VIDEO ON DEMAND :
SERVER SYSTEM AND
METHOD :

APPEAL BRIEF

Mail Stop: Appeal Brief - Patents
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Alexandria, VA 22313-1450

May It Please The Honorable Board:

Applicants appeal the status of Claims 1, 3, 5-15, 17, and 19-22 as rejected in the Non-Final Office Action dated January 28, 2008, the Final Office Action dated July 9, 2008, and the Advisory Action dated October 14, 2008, pursuant to the Notice of Appeal filed November 4, 2008, and submit this Appeal Brief. Enclosed you will find one copy of the Brief.

CERTIFICATE OF MAILING

I hereby certify that this correspondence, and any documents that are attached or enclosed thereto, is being deposited with the United States Postal Service as first class mail in a postage paid envelope addressed to: Mail Stop: Appeal Brief – Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date indicated below.

January 5, 2009
Date

Patricia M. Fedorowycz
Patricia M. Fedorowycz

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1. Real Party in Interest

The real party in interest is THOMSON LICENSING S.A., the assignee of the entire right title and interest in and to the subject application by virtue of an assignment recorded with the United States Patent and Trademark Office on 9 March 2005 at Reel/Frame 016828/0516.

2. Related Appeals and Interferences

None.

3. Status of Claims

Claims 1-22 are pending. Claims 1-22 stand rejected and are under appeal.

A copy of the Claims 1-22 is presented in Section 8 below.

4. Status of Amendments

A Preliminary Amendment filed with the USPTO on March 8, 2005 was entered. An Amendment filed with the USPTO on April 1, 2008, in response to a non-final Office Action dated January 28, 2008, was entered. An Amendment filed with the USPTO on September 12, 2008, in response to a Final Office Action dated July 9, 2008, was not entered. An Advisory Action dated October 14, 2008, to which this Appeal Brief is directed, is currently pending.

5. Summary of Claimed Subject Matter

Claim 1 recites a “method for transmitting a plurality of pre-coded programs having different bit rates across a fixed bandwidth channel” (Claim 1, preamble).

The subject matter of the first element (beginning with “generating”) recited in Claim 1 is described, e.g., at: page 3, lines 10-13. Moreover, the subject matter of the first element of Claim 1 involves, e.g.: elements 12₀, 12₁, 12_{p-1} of FIG. 1.

The subject matter of the second element (beginning with “providing”) recited in Claim 1 is described, e.g., at: page 3, lines 18-22. Moreover, the subject matter of the second element of Claim 1 involves, e.g.: elements 12₀, 12₁, 12_{p-1} of FIG. 1.

The subject matter of the third element (beginning with “during”) recited in Claim 1 is described, e.g., at: page 3, lines 22-25. Moreover, the subject matter of the third element of Claim 1 involves, e.g.: element 16 of FIG. 1.

Independent Claim 10 is directed to a “system for transmitting a plurality of pre-coded programs having different bit rates across a fixed bandwidth channel” (Claim 10, preamble).

The subject matter of the first element (beginning with “means for generating”) recited in Claim 10 is described, e.g., at: page 3, lines 10-13. Moreover, the subject matter of the first element of Claim 10 involves, e.g.: elements 12₀, 12₁, 12_{p-1} of FIG. 1.

The subject matter of the second element (beginning with “means providing”) recited in Claim 10 is described, e.g., at: page 3, lines 18-22. Moreover, the subject matter of the second element of Claim 10 involves, e.g.: elements 12₀, 12₁, 12_{p-1} of FIG. 1.

The subject matter of the third element (beginning with “means for selecting”) recited in Claim 10 is described, e.g., at: page 3, lines 22-25. Moreover, the subject matter of the third element of Claim 10 involves, e.g.: element 16 of FIG. 1.

6. Grounds of Rejection to be Reviewed on Appeal

Claims 1-6, 10-13, 16, and 18-19 stand rejected under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 6,014,694 to Aharoni et al. (hereinafter “Aharoni”)

Claims 3 and 17 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Aharoni in view of U.S. Patent Publication No. 2002/0010938 to Zhang et al. (hereinafter “Zhang”)

Claims 7 and 8 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Aharoni in view of U.S. Patent No. 5,940,738 to Rao (hereinafter “Rao”)

Claims 9 and 22 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Aharoni in view of U.S. Patent Publication No. 2003/0046704 to Laksono et al. (hereinafter “Laksono”)

Claims 14 and 15 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Aharoni in view of U.S. Patent No. 6,665,872 to Krishnamurthy et al. (hereinafter “Krishnamurthy”)

The preceding rejections are presented for review in this Appeal.

Regarding the grouping of the claims, claims 2-9 rise or fall with claim 1 and claims 11-22 rise or fall with claim 10.

7. **Argument**

A. Introduction

The present principles provides a method (Claim 1) and system (Claim 10) for transmitting a plurality of pre-recorded programs having different bit rates across a fixed bandwidth channel.

Independent claims 1 and 10 recite novel features not shown in the cited references and that have already been pointed out to the Examiner. As such, applicants present independent Claims 1 and 10, and the claims that depend therefrom for review in this appeal.

B. Whether Claims 1-6, 10-13, 16, and 18-19 are Anticipated Under 35 U.S.C. §102(b) With Respect To U.S. Patent No. 6,014,694 to Aharoni et al.

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” MPEP §2131, citing *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

The Examiner has rejected Claims 1-6, 10-13, 16, and 18-19 as being anticipated by U.S. Patent No. 6,014,694 to Aharoni et al. (hereinafter “Aharoni”). The Examiner contends that the cited reference shows all the features recited in these claims.

Aharoni discloses a “system for adaptive video/audio transport over a network” (Aharoni, Title). In further detail, Aharoni discloses the following in his Abstract:

“A system for adaptively transporting video over networks wherein the available bandwidth varies with time. The system comprises a video/audio codec that functions to compress, code, decode and decompress video streams that are transmitted over networks having available bandwidths that vary with time and location. Depending on the channel bandwidth, the system adjusts the compression ratio to accommodate a plurality of bandwidths ranging from 20 Kbps for POTS to several Mbps for switched LAN and ATM environments. Bandwidth adjustability is provided by offering a trade off between video resolution, frame rate and individual frame quality. The system generates a video data stream comprised of Key, P and B frames from a raw source of video. Each frame type is further comprised of multiple levels of data representing varying degrees of quality. In addition, several video server platforms

can be utilized in tandem to transmit video/audio information with each video server platform transmitting information for a single compression/resolution level.”

The features of claims 1 and 10, and the claims that depend therefrom, are not shown or suggested in the cited references, as discussed hereinafter.

B1. Claims 1-6, 10-13, 16, and 18-19

None of the cited references, either taken singly or in combination, teach or suggest the following feature of “generating at least two different bit rate representations of each program” recited in claims 1 and 10 and the claims that depend therefrom.

Initially, applicants would like to clarify the concepts of the claimed principles. As described in applicants’ specification, a generator generates a plurality of different bit rates for each program. Thus, for each video stream (i.e., a program), more than one version of that same program is generated having at least two different bit rates (i.e., two streams of the same program that have different bit rates).

In asserting this rejection, the Examiner has cited column 3, lines 917 of Aharoni as disclosing the above recited feature of “generating at least two different bit rate representations of each program”. However, Aharoni teaches nothing of the sort. As depicted with reference to Figures 1-3 and described with respect to Col. 6, line 33 to column 9, line 15 of his patent, Aharoni discloses a raw video source 12 that supplies video to a video compression/file generator 14. The output of the video/compression file generator undergoes storage as compressed video 16 for retrieval from the video server 18 and distribution over the network 20, to a client 22. The video/compression file generator “adjusts the compression ratio” to accommodate the measured bandwidth of the channel. This concept, however, does not constitute the same invention as, nor remotely suggestive of applicants’ feature of generating where more than one representation of the same program at different bit rates for later retrieval. Aharoni clearly states, “Depending on the channel bandwidth, the system adjusts the compression ratio to accommodate a plurality of bandwidths ranging from 20Kbps – POTS to Mbps for switched LAN environments...where the bandwidth adjustment is provided by offering a trade off between

video resolution (e.g., 160x120, 320x420, 640x480), frame rate (e.g., 30fs, 15fs, 7.5fs) and individual frame quality (See Col 6, line 64 – Col. 7, line 6).

In fact, Aharoni teaches a completely different concept than applicants' claims which recite the feature of generating two or more different bit rate representations of the same (each) program.

In view of this distinction, Aharoni fails to anticipate, or render obvious the teachings of the claimed invention as set forth in originally submitted independent claims 1 and 10.

Moreover, none of the cited references, either taken singly or in combination, teach or suggest the feature of “selecting a representation for each program to maximize the quality of the selected representation”. Aharoni does not provide for different representations of the same program in at least two different bit rates. In fact, the portion of the Aharoni patent at Col. 6, line 61 to column 7, line 6 does not disclose or remotely suggest this concept. Rather, Aharoni teaches the use of a different compression ratio based on the bandwidth of the channel, but does not “select” between already generated versions of the **same** program at different bit rates.

In view of the foregoing, applicants submit that Aharoni does not teach the above recited features of Claim 1 as well as Claims 2-6 that depend therefrom, and Claim 10, as well as Claims 11-13, 16, and 18-19 that depend therefrom. Applicants request reversal of the rejection of these claims.

C. Whether Claims 3 and 17 are Unpatentable Under 35 U.S.C. §103(a) With Respect To U.S. Patent No. 6,014,694 to Aharoni et al. in view of U.S. Patent Publication No. 2002/0010938 to Zhang et al.

“To establish prima facie obviousness of a claimed invention, all the claim features must be taught or suggested by the prior art” (MPEP §2143.03, citing *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)). “If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious” (MPEP §2143.03, citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)).

The Examiner rejected Claims 3 and 17 as being unpatentable over U.S. Patent No. 6,014,694 to Aharoni et al. (hereinafter “Aharoni”) in view of U.S. Patent Publication No. 2002/0010938 to Zhang et al. (hereinafter “Zhang”). The Examiner contends that the cited combination shows all the features recited in these claims.

As discussed previously, Aharoni concerns a “system for adaptive video/audio transport over a network” (Aharoni, Title). Rather than repeat the details of the Aharoni patent, applicants reiterate that this reference does not teach or suggest applicants’ feature of generating at least two different bit rate representations of each program.” Further, the Aharoni patent does not disclose applicants feature of “selecting a representation for each program to maximize the quality of the selected representation.”

Zhang describes a “resource allocation in multi-stream IP network for optimized quality of service.” In particular, Zhang discloses the following in his Abstract:

“A resource allocation of multiple compressed AV streams delivered over the Internet is disclosed that achieves end-to-end optimal quality through a multimedia streaming TCP-friendly transport (MSTFP) protocol that adaptively estimates the network bandwidth while smoothing the sending rate. Resources allocated dynamically according to a media encoding distortion and network degradation algorithm. A scheme is also disclosed for dynamically estimating the available network bandwidth for streaming of objects, such as MPEG-4 multiple video objects, in conjunction with the MSTFP protocol. The scheme can account for packet-loss rates to minimize end-to-end distortion for media delivery.”

As discussed below, the features of Claims 3 and 17 are not disclosed or suggested in the cited references, rendering these claims patentable over the art of record.

C1. Claims 3 and 17

Claims 3 and 17 depend from claims 1 and 10 respectively, and incorporate by reference all of the features of their parent claim(s). Thus, claims 3 and 17 incorporate by reference the feature of, “generating at least two different bit rate representations of each program”. As discussed above, Aharoni teaches nothing of the sort. In fact, Aharoni teaches a completely different concept than applicants’ claimed feature of generating two or more different bit rate representations of the same (each) program.

Since the Aharoni fails to anticipate, or render obvious the features recited in Claims 1 and 10, claims 3 and 17 likewise patentably distinguish over Aharoni for the same reasons. Further, applicants submit that none of the remaining references cure the deficiencies of Aharoni, and are silent with respect to the above recited features.

Moreover, none of the cited references, either taken singly or in combination, teach or

suggest applicants' claimed feature of selecting a representation for each program such to maximize the quality of the selected representation, as recited in claims 1 and 10 and incorporated by reference in claims 3 and 17, respectively. None of the remaining references cure the deficiencies of Aharoni, and are silent with respect to the above recited features.

Accordingly, Claims 3 and 17 patentably distinguish over the cited combination for at least the reasons set forth above. Applicants request reversal of the rejection of these claims.

D. Whether Claims 7 and 8 are Unpatentable Under 35 U.S.C. §103(a) With Respect To U.S. Patent No. 6,014,694 to Aharoni et al. in view of U.S. Patent No. 5,940,738 to Rao

“To establish prima facie obviousness of a claimed invention, all the claim features must be taught or suggested by the prior art” (MPEP §2143.03, citing *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)). “If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious” (MPEP §2143.03, citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)).

The Examiner has rejected Claims 7 and 8 as being unpatentable over U.S. Patent No. 6,014,694 to Aharoni et al. (hereinafter “Aharoni”) in view of U.S. Patent No. 5,940,738 to Rao (hereinafter “Rao”). The Examiner contends that the cited combination shows all the features recited in these claims.

As discussed previously, Aharoni concerns a “system for adaptive video/audio transport over a network” (Aharoni, Title). Rather than repeat the details of the Aharoni patent, applicants reiterate that this reference does not teach or suggest applicants' feature of generating at least two different bit rate representations of each program. Further, the Aharoni patent does not disclose applicants feature of “selecting a representation for each program to maximize the quality of the selected representation.”

Rao concerns a “video pedestal network” (Rao, Title). In further detail, Rao discloses the following in his Abstract:

“An architecture for distributing digital information to subscriber units wherein selection from among multiple digital services is accomplished by transmitting a tuning command from a subscriber unit to an intermediate interface. The intermediate interface selects the desired service from a broadband network and transmits it to the subscriber unit over a bandwidth-constrained access line. The bandwidth-constrained access line may be implemented with existing infrastructure, yet the subscriber unit may access a wide variety of digital information available on the broadband network. Universal broadband access is thus provided at low cost. Output bandwidth of broadcast equipment may also be optimized.”

The features of Claims 7 and 8 reproduced herein are not shown in the cited references, and that Claims 7 and 8 should be allowed.

D1. Claims 7 and 8

Claims 7 and 8 depend from claim 1 and incorporate by reference by virtue the feature of “generating at least two different bit rate representations of each program.” As discussed above, Aharoni teaches nothing of the sort. In fact, Aharoni teaches a completely different concept than applicants’ claimed feature of generating two or more different bit rate representations of the *same (each)* program.

Thus, Aharoni fails to anticipate or render obvious Claims 7 and 8. Applicants assert that none of the remaining references cure the deficiencies of Aharoni, and are silent with respect to the above recited features.

Claims 7 and 8 also incorporate by reference the feature of “selecting a representation for each program such to maximize the quality of the selected representation.” In contrast, Aharoni teaches using different compression ratio based on the bandwidth of the channel. Thus, Aharoni clearly does not “select” between already generated versions of the same program at different bit rates. Further, none of the remaining references cure the deficiencies of Aharoni, and are silent with respect to the above recited features.

Accordingly, Claims 7 and 8 patentably distinguish over the art of record. Applicants request reversal of the rejection of Claims 7 and 8 is earnestly requested.

E. Whether Claims 9 and 22 are Unpatentable Under 35 U.S.C. §103(a) With Respect To U.S. Patent No. 6,014,694 to Aharoni et al. in view of U.S. Patent Publication No. 2003/0046704 to Laksono et al.

“To establish prima facie obviousness of a claimed invention, all the claim features must be taught or suggested by the prior art” (MPEP §2143.03, citing *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)). “If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious” (MPEP §2143.03, citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)).

The Examiner has rejected Claims 9 and 22 as being unpatentable over U.S. Patent No. 6,014,694 to Aharoni et al. (hereinafter “Aharoni”) in view of U.S. Patent Publication No. 2003/0046704 to Laksono et al. (hereinafter “Laksono”). The Examiner contends that the cited combination shows all the features recited in these claims.

As discussed previously, Aharoni concerns a “system for adaptive video/audio transport over a network” (Aharoni, Title). Rather than repeat the details of the Aharoni patent, applicants reiterate that this reference does not teach or suggest applicants’ feature of generating at least two different bit rate representations of each program.” Further, the Aharoni does not disclose applicants feature of “selecting a representation for each program to maximize the quality of the selected representation.”

Laksono concerns a “method and apparatus for pay-per-quality of service for bandwidth consumption in a video system” (Laksono, Title). In further detail, Laksono discloses the following in his Abstract:

“A method and apparatus for controlling access to a video system based on bandwidth consumption include processing that begins as the server monitors bandwidth utilization of connections within the video system. The processing continues when the server receives a request to access a video program via the connection from a client device of the video system. The processing then continues as the server determines whether the bandwidth utilization exceeds a bandwidth threshold. If the bandwidth utilization exceeds the bandwidth threshold, the server provides an indication of viewing-cost options regarding access to the video program to the client device. The processing then continues as the client selects one of the viewing-cost options and provides the selected option to the server. The processing then continues as the server processes the request to access the video program based on the client response.”

The features of Claims 9 and 22 reproduced herein are not shown in the cited references, and that Claims 9 and 22 should be allowed.

E1. Claims 9 and 22

Claims 9 and 22 depend from claims 1 and 10, respectively and incorporate by reference the feature of “generating at least two different bit rate representations of each program”. As discussed previously, Aharoni concerns a “system for adaptive video/audio transport over a network” (Aharoni, Title). Rather than repeat the details of the Aharoni patent, applicants reiterate that this reference does not teach or suggest applicants’ feature of generating at least two different bit rate representations of each program.” Further, the Aharoni patent does not disclose applicants feature of “selecting a representation for each program to maximize the quality of the selected representation.”

In view of this distinction, Aharoni fails to anticipate, or render obvious Claims 9 and 22. Further, none of the remaining references cure the deficiencies of Aharoni, and are silent with respect to the above recited features.

Further, claims 9 and 22 incorporate by reference the feature of “selecting a representation for each program such to maximize the quality of the selected representation.”

In contrast, Aharoni teaches the use of a different compression ratio based on the bandwidth of the channel, and thus does not “select” between already generated versions of the same program at different bit rates. None of the remaining references cure the deficiencies of Aharoni, and are silent with respect to the above recited features.

Accordingly, Claims 9 and 22 patentably distinguish over the cited combination for at least the reasons set forth above. Therefore, applicants request reversal of the rejection of claims 9 and 22.

F. Whether Claims 14 and 15 are Unpatentable Under 35 U.S.C. §103(a) With Respect To U.S. Patent No. 6,014,694 to Aharoni et al. in view of U.S. Patent No. 6,665,872 to Krishnamurthy et al.

“To establish prima facie obviousness of a claimed invention, all the claim features must be taught or suggested by the prior art” (MPEP §2143.03, citing *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)). “If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious” (MPEP §2143.03, citing *In re Fine*,

837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)).

The Examiner rejected Claims 14 and 15 as being unpatentable over U.S. Patent No. 6,014,694 to Aharoni et al. (hereinafter “Aharoni”) in view of U.S. Patent No. 6,665,872 to Krishnamurthy et al. (hereinafter “Krishnamurthy”). The Examiner contends that the cited combination shows all the features recited in these claims.

As discussed previously, Aharoni concerns a “system for adaptive video/audio transport over a network” (Aharoni, Title). Rather than repeat the details of the Aharoni patent, applicants reiterate that this reference does not teach or suggest applicants’ feature of generating at least two different bit rate representations of each program.” Further, the Aharoni patent does not disclose applicants feature of “selecting a representation for each program to maximize the quality of the selected representation.”

Krishnamurthy discloses a latency-based statistical multiplexing technique. (Krishnamurthy, Title). In further detail, Krishnamurthy discloses the following in his Abstract:

“When two or more different video streams are compressed for concurrent transmission of multiple compressed video bitstreams over a single shared communication channel, control over both (1) the transmission of data over the shared channel and (2) the compression processing that generates the bitstreams is exercised taking into account the differing levels of latency required for the corresponding video applications. For example, interactive video games typically require lower latency than other video applications such as video streaming, web browsing, and electronic mail. A multiplexer and traffic controller takes these differing latency requirements, along with bandwidth and image fidelity requirements, into account when controlling both traffic flow and compression processing. In addition, an off-line profiling tool analyzes typical video applications off-line in order to generate profiles of different types of video applications that are then accessed in real-time by a call admission manager responsible to controlling the admission of new video application sessions as well as the assignment of admitted applications to specific available video encoders, which themselves may differ in video compression processing power as well as in the degree to which they allow external processors (like the multiplexer and traffic controller) to control their internal compression processing.”

It will be shown herein below that the features of Claims 14 and 15 reproduced herein are not shown in the cited references, and that Claims 14 and 15 should be allowed.

F1. Claims 14 and 15

None of the cited references, either taken singly or in combination, teach or suggest applicants' feature of "generating at least two different bit rate representations of each program" recited in claim 10, and incorporated by reference in claims 14 and 15.

As discussed previously, Aharoni concerns a "system for adaptive video/audio transport over a network" (Aharoni, Title). Rather than repeat the details of the Aharoni patent, applicants reiterate that this reference does not teach or suggest applicants' feature of generating at least two different bit rate representations of each program." Further, the Aharoni patent does not disclose applicants feature of "selecting a representation for each program to maximize the quality of the selected representation."

In view of this distinction, Aharoni fails to anticipate, or render obvious the teachings of the claimed invention as recited in Claims 14 and 15 by virtue of their dependency from claim 10. Further, none of the remaining references cure the deficiencies of Aharoni, and are silent with respect to the above recited features.

Moreover, none of the cited references, either taken singly or in combination, teach or suggest the step of "selecting a representation for each program such to maximize the quality of the selected representation" as recited in claim 10 and incorporated by reference in claims 14 and 15. .

Aharoni does not provide for different representations of the same program in at least two different bit rates. Further, none of the remaining references cure the deficiencies of Aharoni, and are silent with respect to the above recited features. Accordingly, Claims 14 and 15 patentably distinguish over the cited combination for at least the reasons set forth above. Therefore, applicants request reversal of the rejection of Claims 14 and 15.

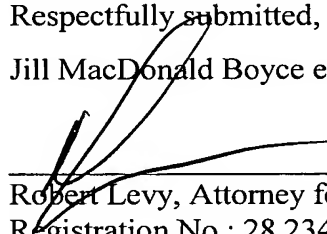
G. Conclusion

In summary, none of the cited art, taken alone or in any combination, renders applicants claims unpatentable. Accordingly, applicants respectfully request that the Board reverse the rejections of Claim 1-22 under 35 U.S.C. §102(b) and 35 U.S.C. §103(a).

Please charge the amount of \$540.00, covering fee associated with the filing of the Appeal Brief, to **Thomson Licensing LLC, Deposit Account No. 07-0832**. In the event of any non-payment or improper payment of a required fee, applicants authorize the Commissioner to charge **Deposit Account No. 07-0832** as required to correct the error.

Respectfully submitted,
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8. CLAIMS APPENDIX

1. (rejected) A method for transmitting a plurality of pre-coded programs having different bit rates across a fixed bandwidth channel, comprising the steps of:

generating at least two different bit rate representations of each program;

providing control information at each of a plurality of successive time windows T for each representation of each program, the control information for each successive window indicating a bit rate and quality measure for a representation of a corresponding program; and

during each time window T, selecting a representation for each program such to maximize the quality of the selected representations while not exceeding a total available capacity for the channel.

2. (rejected) The method according to claim 1 wherein the step of generating at least two different bit rates representation further comprises the step of generating for each program a lowest bit rate representation having a peak bit rate not greater than C/P where C is the total channel capacity in time T and P is the total number of programs.

3. (rejected) The method according to claim 1 wherein the step of providing the control information further comprises the step of establishing the peak signal-to-noise ratio (PAN) as the quality measure embodied in the control information.

4. (rejected) The method according to claim 1 wherein the selecting step further comprises the step of selecting a representation for each program which meets the constraint

$$\sum_{p=0}^{P-1} r[p, n[p]] \leq C \text{ for all time windows wherein:}$$

C is the total channel capacity available in time frame T;

P is the total number of programs;

$p \in (0, P-1)$, is the index of a particular program;

$N[p]$ is the total number of representations of program p ;

$n[p] \in (0, N[p] - 1)$ is the index of a particular representation of program p ; and

$r[p, x]$ is the bit rate of representation x of program p during T.

5. (rejected) The method according to claim 4 further comprising the step of choosing

each program's representation $n[p] \in (0, N[p]-1)$ to maximize the quality of the program p that had the minimum quality.

6. (rejected) The method according to claim 5 further comprising the steps of:
- (a) sorting the quality information for with the bit rate and quality measure monotonically increasing with an index value;
 - (b) storing each bit rate increment (delta) and quality value for each index value;
 - (c) beginning with a lowest index value, computing total capacity S for program representations selected thus far for such index value;
 - (d) selecting a program representation at a lowest quality measure;
 - (e) checking whether the bit rate increment of the selected program at the lowest quality, when added to the representations selected thus far, exceeds total channel capacity, and if not
 - (f) incrementing the index value; and
 - (g) repeating steps (c)-(f).

7. (rejected) The method according to claim 1 wherein the selecting step further comprises the step of selecting the representation for each program such to maximize a sum of individual program qualities by solving $\max_{n[p]} \sum_{p=0}^{P-1} q[p, n[p]]$; subject to $\sum_{p=0}^{P-1} r[p, n[p]] \leq C$ wherein ,

C is the total channel capacity available in time frame T ;

P is the total number of programs;

$p \in (0, P-1)$, is the index of a particular program;

$N[p]$ is the total number of representations of program p ;

$n[p] \in (0, N[p] - 1)$ is the index of a particular representation of program p ;

$r[p, x]$ is the bit rate of representation x of program p during T ; and

$q[p, x]$ is the quality of representation x of program p during T .

8. (rejected) The method according to claim 1 wherein the selecting step further comprises the step of selecting the representation for each program such to maximize a product of individual program qualities by solving

$$\max_{n[p]} \prod_{p=0}^{P-1} q[p, n[p]]; \text{ subject to } \sum_{p=0}^{P-1} r[p, n[p]] \leq C$$

where,

C is the total channel capacity available in time frame T ;

P is the total number of programs;

$p \in (0, P-1)$, is the index of a particular program;

$N[p]$ is the total number of representations of program p ;

$n[p] \in (0, N[p] - 1)$ is the index of a particular representation of program p ;

$r[p, x]$ is the bit rate of representation x of program p during T ; and

$q[p, x]$ is the quality of representation x of program p during T .

9. (rejected) The method according to claim 8 further comprising the step of applying a weighted average to provide different classes of service for different viewers.

10. (rejected) A system for transmitting a plurality of pre-coded programs having different bit rates across a fixed bandwidth channel, comprising the steps of:

means for generating at least two different bit rate representations of each program;

means providing control information at each of a plurality of successive time windows T for each representation of each program, the control information for each successive window indicating a bit rate and quality measure for a representation of a corresponding program; and

means for selecting during each time window T a representation for each program such to maximize the quality of the selected representations while not exceeding a total available capacity for the channel.

11. (rejected) The system according to claim 10 wherein the generating means and control information providing means collectively comprise:

a plurality of multirate stream generators, each associated with a corresponding one of the plurality of pre-coded programs.

12. (rejected) The system according to claim 10 wherein the generating means and control information providing means collectively comprise:

a multirate video encoder for encoding at least two bit rate representations of each pre-coded program.

13. (rejected) The system according to claim 10 wherein the generating means and control information providing means collectively comprise:

a multirate video encoder for encoding at least two bit rate representations of each pre-coded program; and

a plurality of transport packetizers, each serving to packetize the bit rate presentations for each pre-coded program.

14. (rejected) The system according to claim 10 wherein the selecting means includes a static multiplexer.

15. (rejected) The system according to claim 12 wherein the selecting means comprises:

a static multiplexer; and

a transport packetizer for packetizing the selecting representation.

16. (rejected) The system according to claim 10 wherein the selecting means generates for each program a lowest bit rate representation having a peak bit rate not greater than C/P where C is the total channel capacity in time T and P is the total number of programs.

17. (rejected) The system according to claim 10 wherein control information

providing means establishes quality measure in accordance with a peak signal-to-noise ratio (PSNR).

18. (rejected) The system according to claim 10 wherein the selecting means selects a representation for each program which meets the constraint $\sum_{p=0}^{P-1} r[p, n[p]] \leq C$ for all time windows where:

C is the total channel capacity available in time frame T ;

P is the total number of programs;

$p \in (0, P-1)$, is the index of a particular program;

$N[p]$ is the total number of representations of program p ;

$n[p] \in (0, N[p] - 1)$ is the index of a particular representation of program p ; and

$r[p, x]$ is the bit rate of representation x of program p during T .

19. (rejected) The system according to claim 18 wherein the selecting means chooses each program's representation $n[p] \in (0, N[p]-1)$ to maximize the quality of the program p that had the minimum quality.

20. (rejected) The system according to claim 10 wherein the selecting means selects the representation for each program such to maximize a sum of individual program qualities by solving:

$$\max_{n[p]} \sum_{p=0}^{P-1} q[p, n[p]]; \text{ subject to } \sum_{p=0}^{P-1} r[p, n[p]] \leq C$$

where,

C is the total channel capacity available in time frame T ;

P is the total number of programs;

$p \in (0, P-1)$, is the index of a particular program;

$N[p]$ is the total number of representations of program p ;

$n[p] \in (0, N[p] - 1)$ is the index of a particular representation of program p ;

$r[p, x]$ is the bit rate of representation x of program p during T ; and
 $q[p, x]$ is the quality of representation x of program p during T .

21. (rejected) The system according to claim 10 wherein the selecting means selects the representation for each program such to maximize a product of individual program qualities by solving:

$$\max_{n[p]} \prod_{p=0}^{P-1} q[p, n[p]]; \text{ subject to } \sum_{p=0}^{P-1} r[p, n[p]] \leq C$$

where,

C is the total channel capacity available in time frame T ;

P is the total number of programs;

$p \in (0, P-1)$, is the index of a particular program;

$N[p]$ is the total number of representations of program p ;

$n[p] \in (0, N[p] - 1)$ is the index of a particular representation of program p ;

$r[p, x]$ is the bit rate of representation x of program p during T ; and

$q[p, x]$ is the quality of representation x of program p during T .

22. (rejected) The system according to claim 10 wherein a weighted average is applied to provide different classes of service for different viewers.

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9. RELATED EVIDENCE APPENDIX

None.

10. RELATED PROCEEDINGS APPENDIX

None.